AMATEUR CINE WORLD

SEPT.—NOV. 1942

HOW REDUCTION PRINTS ARE MADE
By G. H. SEWELL, A.R.P.S.

• • •

FAMOUS LIBRARY FILMS
By H. A. V. BULLEID

• • •

TRACKING DOWN SOUND PROBLEMS
By C. L. THOMSON, B.Sc.

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LOOKING BACKWARD

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AMATEUR CINE WORLD

Incorporating "Miniature Camera World"

AUTUMN
SEPTEMBER—NOVEMBER, 1942
VOL. I. No. 8
(*Old Series, Vol. VIII, No.* 11)

THE ONLY JOURNAL SOLELY DEVOTED TO SUBSTANDARD CINEMATOGRAPHY

AMATEUR CINE WORLD is published quarterly from 324, *Gray's Inn Road, London, W.C.*1

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GORDON S. MALTHOUSE, *Editor*

Your camera can be busy again

THREE years of war. On the third anniversary one takes stock. Tremendous events are imminent. When the struggle is for civilisation itself, dare one have the temerity to try to fit into the vast pattern one's own little design for living—that little design that is nevertheless built up of intriguing complexities of habit, thought, outlook, mode of life?

Assuredly yes, for is it not our way of living that we are fighting to preserve? We have no reason to feel that in pausing to think of recreation, of refreshment for the renewing of the unremitting struggle, we are guilty of a shallow futility.

One could think up a nice lot of resounding Parliamentary-seeming terms for resolving this theme, but it occurs to us that the simple statement that "All work and no play makes Jack a dull boy" is as good as any. In these urgent times dullness is a crime. So we make no apology for enquiring into the matter of how our own particular recreation—the practice of cinematography—is standing up to the strain.

Is it dead or merely moribund? On the face of it, it would seem that it is, at any rate, cataleptic. The scarcity of film and equipment, the disbanding of the clubs, the hundreds of thousands who have exchanged the camera for the Lee-Enfield . . . these contribute to the impression that movie-making as a hobby has retired for the duration.

But that is quite the wrong picture. Substandard cinematography has, in fact, suddenly come of age in these three years. It has been forced into blossom like a hot house plant. Many movie-makers, however, are unaware of this, because they have not the opportunity of looking inside the greenhouse. It has been taken over by the Government for the furtherance of the war effort.

More substandard film is being used than ever before. The advance in the optical and mechanical aspects of substandard is considerable. Huge new audiences have been captured by the 16mm. sound film. The flowers are not for us to pick now, but the research and practice of the war years guarantee a fine crop for all when the time comes for us to enjoy it.

In the meantime, how best can the lone worker carry on with film-making, as distinct from projection (for which there are, of course, unlimited opportunities)? One simple answer is: by no longer remaining a lone worker—by pooling resources with his friends, by securing such of the benefits as still remain of collective organisation.

A case in point is provided by the Institute of Amateur Cinematographers and the Federation of Cinematograph Societies who, initially through the agency of A.C.W., are able to offer the movie-maker the opportunity of producing some worthwhile films without the bother of deciding where the stock is to come from.

A short time ago the Royal Society for the Prevention of Accidents approached this magazine for introductions to amateurs who would be able to assist it in its scheme for the production of a number of films dealing with road safety for children. We felt that the ramifications of this scheme were such that it would be best handled by cine organisations rather than individual workers.

The F.C.S. and the I.A.C. were quick to see its possibilities, and it is now taking effective shape under the guidance of a small committee. Mr. G. Wain, A.R.P.S., Hon. Secretary of the Federation, is responsible for much of the organisation and, for a limited period, is able to devote his whole time to it. So the stage is set.

Briefly, a number of films are required for display on school projectors for the instruction of young people, from five years of age upwards, in all aspects of road safety and accident prevention generally. Only one main lesson (or safety rule) should be included

(*Continued on page* 285)

THE WINTER ISSUE OF "AMATEUR CINE WORLD" WILL BE ON SALE DEC. 1

How your reduction prints are made

By GEORGE H. SEWELL, A.R.P.S.

The future of substandard sound films is largely in the hands of two classes of people : those who print them and those who project them. A knowledge of the processes involved will help you appreciate the necessity for careful projection.

IT is no secret that in these times sub-standard films, chiefly of 16mm. gauge, are being used in considerable quantities for propaganda, for education, for training and for entertainment. An ever-increasing proportion of these films is 16mm. sound-on-film, and almost without exception they are ' printed down ' or ' reduction printed ' from 35mm. originals. This war-time demand is of very great importance to all cine amateurs, existing and potential, because the problems it involves are engaging some of the most enterprising brains in the industry, and the final result cannot but have beneficial repercussions upon the services which are and which will be available to amateur users.

Before the war the majority of library films were silent. After the war that majority will have shifted over to sound. Thousands of persons who had never before encountered sub-standard films are benefiting from them to-day, with the result that there will be a greatly enhanced interest in them after the war. It is to be hoped that the realisation of the undoubted value of 16mm. which has come to many official and commercial bodies as a result of war-time demands will result in the diminution of the uninformed antagonism which sometimes obtained before Armageddon.

The future of sub-standard sound films is, however, very largely in the hands of two classes of people, those who print them and those who project them.

To take the latter first. It is inevitable that audiences will mentally compare any kind of sound-film presentation with the normal cinema presentation. Cinemas are in the main carefully constructed as to acoustics, the equipment is of good quality and of reasonably adequate power for the work it has to do ; lighting and seating are well arranged, and all extraneous sound from the mechanism is prevented from reaching the audience.

The presentation of sub-standard sound-film programmes is almost always, on the other hand, something of a ' fit-up ' process. The machine may have to be operated from either A.C. or D.C., within a wide range of voltages ; acoustics may not be good ; the machine itself and incidental equipment such as a generator or converter may cause unwanted noise to compete with the product of the sound track ; there may be undesirable light leakage on to the screen from a variety of causes, and in a desire to give as big a picture as possible the operator will often strain the lighting capacity of the projector up to, and even beyond, its reasonable limit.

All of these things will cause the audience to obtain a degraded impression of the sub-standard film, yet none of these things are inherent in the method. The moral is that, knowing that the conditions of exhibition impose certain disadvantages, every operator should endeavour to eliminate as many of them as he possibly can and to set himself the highest possible standard for every show he gives. Slovenliness can soon result in a dulling of his own reactions to the inferiority of his shows, with a progressive degradation of the shows themselves. In any case, everyone who is engaged on giving these sub-standard shows should visit a good class commercial picture house at frequent intervals to keep himself up to form.

But to deal, now, with the first of the two aspects mentioned above, the most efficient and conscientious of operators cannot possibly do justice to a film which is itself of bad quality. The caretakers of quality are the film printing houses. Their results vary from an output which in some cases is barely distinguishable from 35mm. projection when shown under comparable conditions, to the other end of the scale where graininess, bad picture quality and unintelligible noises abound. Yet on the whole it can be said that already the general standard of quality of sub-standard sound library films is higher than the general standard of quality of sub-standard silent library films during the years before the war. Several technical developments which are in the air foreshadow the possibility of even greater improvements in the future.

Many sound-film library users speak of ' reduction prints ' without any very clear idea of what is meant by the term, or of the technical methods used to produce such prints, or of the problems involved. Space

does not permit of an exhaustive discussion of this subject, but the following brief outline may be of interest and possibly of assistance to those who are using such films.

Definition. A reduction print is one which is smaller in size than the original from which it was made. Generally the reduction is from 35mm. film down to 16mm. film, 1,000 feet of the former being represented by 400 feet of the latter, and both representing a running time of 11 minutes 6 seconds at a frequency of 24 frames per second.

Requirements. The 35mm. original, of whatever form, must be reduced to a 16mm. print conforming with the S.M.P.E. standards, which are universally recognised in this country. Such a film has its sound-track running down the left side when the film is threaded into the projector and is viewed from the light source. Under similar conditions a 35mm. S.M.P.E. film has its sound track on the right. There are good technical reasons for this difference between one size and another, but that is outside our present purview.

Methods. Picture reduction and sound reduction are carried out as separate operations. Picture reduction is performed optically, and is more accurately termed projection printing. Sound may be reduced optically or by re-recording.

Where optical methods are used for both picture and sound the two operations are generally performed close together, either on two adjacent machines or on two sections of one machine. Where re-recording methods are used for the sound-track reduction, the picture and sound operations may be carried out in two parts of the laboratory, or even in two separate laboratories, each of which is under the control of a specialist.

Picture Reduction. If an ordinary enlarger is set so that the distance between the negative and the lens is greater than the distance between the lens and the paper, the result will be a reduced image instead of an enlarged one. If such an arrangement is set up with a lens of appropriate focal length, it is possible to project from a 35mm. negative a picture of suitable size to occupy the picture area on 16mm. film. It is then necessary to provide some means of storing and moving the 35mm. negative at one end of the instrument, and the 16mm. positive film at the other end of the instrument.

It will also be realised that the two films must move in opposite directions owing to the inversion of the projected image. Further, the two transit mechanisms must be of a high standard of precision, and must be precisely linked together so that they move in perfect synchronism. The instrument is equipped with an illumination and condenser system behind the 35mm. negative end, with a shutter which operates during film shift, with means of varying the speed and frequency of movement of the two pieces of film and a number of fine adjustments. It is generally designed to operate in a darkroom, so that the positive printing material can be handled freely on open spool arms. Film transit is of the intermittent type, both films moving down one complete frame depth after each exposure has been made.

Sound Reduction. Original sound tracks may be either V.A. or V.D., and may be reduced to either V.A. or V.D. Some reduced films will contain examples of both systems. In V.A. (or Variable Area) sound tracks the modulation of the light stream which passes from the exciter lamp to the photo-electric cell is accomplished by imprinting on the track a pattern of full black and clear white which so varies that from moment to moment a greater or lesser portion of the sound slit in the projector is uncovered. In V.D. (Variable Density) the track is crossed by a series of bars of varying darkness, like uneven steps in a ladder, which are approximately the size and shape of the sound slit in the projector but which obscure it to a greater or less degree from moment to moment.

The 16mm. versions of these sound tracks can be projected down as in the case of the pictures, but the negative and positive films must be moved smoothly and continuously, only a small narrow band on the original being reproduced at any given moment.

Alternatively, the original sound track can be passed through a re-recording and amplification system and caused to operate a sound camera, either of the V.A. or V.D. type, recording the received vibrations on the sound-track portion of a 16mm. film.

Whether V.A. or V.D., optical or sound reduction are used, the development of the track calls for high standards of accuracy. The higher the frequencies of the recorded sound the finer the image on the film, yet these high frequencies or over-tones are essential to give the characteristic quality in the recording of different types of instrument and other individual sounds. 35mm. sound track has an advantage in that its surface speed past the sound scanning slit is 90 feet a minute, as against 36 feet a minute for 16mm. This means that in the standard film the delicate images of high frequency vibrations are spaced further apart, are larger in relation to the resolution

(*Continued on page 268*)

The Cabinet of Dr. Caligari

★

A CRITICAL COMMENTARY BY

H. A. V. Bulleid, M.A.

★

FAMOUS LIBRARY FILMS. No. 15

(Will readers kindly note that, while we are glad to provide information on the films already dealt with in this series, we are unable to supply back numbers containing the reviews.)

★

Production	.. Decla-Bioskop (later UFA) Berlin, 1919.
Trade Review	.. November, 1923.
English Release	.. April 7th, 1924.
Distributors	.. Phillips Film Co.
Length	.. .. 4,500 feet, approx.
Directed by	.. Dr. Robert Wiene.
Scenario	.. .. Karl Mayer and Hans Janowitz.
Photography	.. Willy Hameister.
Design	.. .. Walter Reimann, Herman Warm, Walter Röhrig.

Sub-standard availability :—Pathescope Library, 3 notched reels of 9.5mm., equivalent to 2,600 feet of 35mm.
British Film Institute Library, full version on 6 reels of 16mm.

The Leading Players :—

Werner Krauss	as Doctor Caligari and Doctor Sonnow.
Conrad Veidt	as Cesare the somnambulist.
Lil Dagover	as Jane Olsen
Friedrich Feher	as Francis.
Hans von Twardoswki	as Alan.
Rudolf Lettinger	as Dr. Olsen.
Rudolf Klein-Rogge	as a criminal.

CALIGARI is another of those films about which screeds have been written : on the sociological aspect, naming it a macabre, introspective drama produced by a defeated race : on the commercial aspect, quoting its real and imagined effects upon contemporary cinema technique : and on the artistic aspect, with references to painting, pure pictorialism, influence of theatre, etc., etc. . . . The first does not concern us here, though we might mention the macabre *Jekyll and Hyde* with John Barrymore, produced in 1917, as an example of the macabre from an undefeated race !

The second needs exploding. *Caligari*, due to a certain coolness between this country and Germany after the war, only arrived here late in 1923. Its effect on British films was nil. It had arrived in America in April, 1921. Its effect on American films was nil : and naturally because *Caligari* is a study in unreality whereas the Americans made a God of realism : and, anyway, they didn't need teaching anything about cinematography. They already had, by 1919, used all the purely technical devices credited to the Germans, and as for psychological interpretations or experiments with design and action to make pictorial compositions, they simply were not interested. The public paid for realism hooked on to hokum stories, and films were manufactured accordingly. Precisely the same is true to-day : *Citizen Kane* drew less than a Melvyn Douglas frolic.

The artistic aspect of *Caligari* is here under discussion. One's first and most forcible reaction after seeing the film is to recall mentally a series of futurist paintings come to life. The actors have, both in clothing and in gesture, been directed in perfect harmony with the bizarre sets, which in turn perfectly render the distorted imagination of the teller of the story. Theatricalism is not marked—particularly having in mind the period—though there is a preponderance of long shots : but these are essential to allow due place on the screen to the all-important backgrounds. It is much to the credit of director and players that the influence of the theatre was so well avoided : because both Krauss and Veidt were stage stars and it was their first film appearance. Incidentally, this did a lot to break down the snob-barriers surrounding Cinema. These two players obviously co-operated to the utmost with the director, who in turn arranged his action and posing to conform with the most carefully designed and painted sets ; the whole composition is thus uniformly impressive. It is of interest to note also that the two non-distorted sets, *i.e.*, the sinister, over-grown garden and the main hall of the asylum, are as effective (and as effectively used) as the rest.

The brief treatment is as follows . . . Seated in a bleak garden, Francis recounts his story to his companion :—A doctor Caligari seeks permission to show his somnambulist Cesare at Holstenwal Fair : but is rebuffed by the Town Clerk, who is murdered that same night. Francis and his friend Alan visit the Fair, and Cesare foretells that Alan will be dead by dawn. They

proceed home, vowing friendship no matter which one their idol, Jane Olsen, should choose for husband. That night Alan is murdered.

Next day Francis and Jane's father, the doctor, call on Caligari and find him feeding Cesare: meanwhile another murder is attempted and a man seized who is suspected of all three murders, though he strongly denies the first two. Jane, in search of Francis and her father, visits Caligari and is shown Cesare and runs away in terror: that night Cesare enters her room and abducts her, but after a chase she is found, and on recovery accuses Cesare. Accordingly Francis visits Caligari with the police, and they now find a dummy in place of Cesare. Caligari gets away and proceeds to a Nursing Home, trailed by Francis. Inside, Francis and some of the Staff search the papers of the Principal, Dr. Sonnow, and find a diary relating how he became Caligari and experimented with a somnambulist. Then Cesare is found and brought in; and, faced with this evidence, Dr. Sonnow becomes violent and is straight-jacketed and put into a cell.

Francis and Dr. Olsen examine Cesare in the cabinet inside Caligari's caravan.

Francis finishes recounting this tale to his companion in the bleak garden, and they enter the house to rejoin their guests: *and now we see them in the main hall of the Nursing Home, and it is plainly a lunatic asylum.* Jane is there as a Queen, and pathetically refuses Francis's repeated proposal. Then Dr. Sonnow enters, and Francis rushes wildly at him, so is seized by attendants and taken to a cell: and the doctor says he understands his madness and can cure him.

It will be seen that the main body of the film is constructed in the form of a flash-back relating the story imagined by Francis, in which respect the film is similar to *Vaudeville*—though in the present case more dramatic value is obtained at the end of the flash-back due to the emotional impact on the audience at the realisation that Francis is a lunatic who has built up the tale around the (dreaded) Principal, the (weird) unfortunate Cesare, and the (aloof) beautiful Jane.

The film fades-in with a drab long shot of the neglected garden, Francis and his companion being seated near the camera. Jane approaches and iris-circled close-ups of Francis are cut in. He watches her intently as she passes aloofly by. Then in CM.S. he recalls the terrible adventure that befell them . . .

An expanding diamond iris-in shows the weird little town from the fair-ground; then another L.S. street scene shows Alan reading a bill; cut to L.S. interior Francis reading in his room, Alan bursts in and asks him to come to the Fair. The impact of these weird sets coming so quickly is too much to assimilate, and in fact the 9mm. version has here been excessively pruned. In the 16mm. version the introduction is well done, single-word titles being employed with appropriate eccentricity. The next shot is of an Office corridor, and Caligari requests to see the Town Clerk, introducing himself by card (close-up inserted). He is taken in and the Clerk, seated on an impossibly high stool, curtly bids him wait. Caligari glowers in a lengthy iris-masked close-up, then gets up—and is again told to wait. Then the Clerk descends and turns Caligari over to another official . . . slow oval iris-out.

Two lengthy long shots establish the Fair in full swing, then in CM.S. Caligari rings up an audience outside his tent, and unfurls a full-size canvas of his somnambulist; the sequence closing on a covering long shot.

A title baldly announces the murder of the Town Clerk, then an eccentric iris-in

Werner Krauss

(Shot p in second excerpt from scenario quoted.) This Camera set-up is used throughout the sequence for basic Long Shot. Note perfect balance of light and shade.

The stark angular pattern of the roof-tops, with white line emphasizing Cesare's route.

"Caligari" is a film that needs a sympathetic musical accompaniment—one that will subtly point its weird imagery. Cue sheets are available and may be obtained at a nominal cost. (See page 265.)

reveals a superb long shot, exquisitely composed and horribly sinister, of a disordered bedroom with broken panes in the fantastically shaped window.

Another eccentric iris-in reveals (after delayed opening) Francis and Alan at the Fair. Caligari is about to display Cesare. A finely filled mid-shot of the crowd looking up at Caligari, with excellent types, includes the pair. Long shot then mid-shot, beautifully arranged in terms of high-light and shadow, show Caligari with his coffin-shaped cabinet. His angular gestures match the sharp-cornered set design and the high dramatic pitch of the sequence. He opens one half of the cabinet, then the other, revealing the macabre, black figure of Cesare. Then,

a. C.S.	(oval mask) Caligari looks sideways at Cesare, 50 frames.
b. CM.S.	Caligari speaks to the immobile Cesare. 90 frames.
c. C.S.	(circular mask) Cesare, motionless, 92 frames.
d. C.S.	(oval mask) Caligari says . . ., 35 frames.
e. TITLE	*"Cesare, I am your master. Wake up and walk."*
f. C.S.	(circular mask) very slowly Cesare opens his eyes, 295 frames.
g. L.S.	(low angle) . . . and walks stiffly forward, 586 frames.
h. M.S.	(high angle) Francis and Alan, predominant in the crowd, look on spellbound, 78 frames.

. . . then Alan asks his fortune and is told he will be dead at dawn. This is indeed an eerie sequence, and cinematic means have been properly used in heightening the effect and adding suspense. Caligari is masked in a vertical oval for shots *a* and *d*, which heightens the emphasis while retaining the full effect of his top hat. Cesare, starkly horrible, with tousled hair, is ringed by a diffused circle in shots *c* and *f*. *f* runs over 18 seconds, Cesare's staring eyes riveting the attention. Shots *g* and *h* are admirably contrasted in angle and lighting.

Alan, in close-up against dead black, laughs hysterically. They leave, and in long shot in the town (another exquisitely perfect set, with its strange street lamps, queer patches of shadow, mis-shapen buildings, odd windows and fanciful water-pump) see a notice stating the infallibility of Cesare's forecasts. Then Jane approaches and they talk animatedly. A cut-in long shot shows Caligari entering his caravan. In mid and long shots Francis and Alan swear friendship whichever Jane chooses.

A sinister shadow on the bedroom wall, Alan's staring terror, two outstretched hands, the shadow of a thin dagger, and a lunge forward as the shot fades out—so, admirably, is the murder portrayed. The news is brought to Francis in a long shot that is theatrical and over-acted, and reminiscent

of a 1912 D. W. Griffith Biograph one-reeler. One long shot shows Alan's room as Francis comes. The window is horribly broken.

In the garden of Jane's house—another memorable set, foliage and flowers being most remarkably represented—Francis breaks the news ; again theatricalism has crept in, over-lengthy long and mid-shots covering the action and inviting the inevitable over-acting. At this point, in addition to the abridgement, the order of scenes in the 9mm. version differs slightly from the original, and the scenes of Francis going to the police are cut : but the loss is not serious.

It has to be established that Francis and Dr. Olsen are with Caligari while another murder is committed, and this point was rather laboured in the original. In the 9mm. version we have a shot of Cesare being fed in his cabinet in Caligari's caravan : Francis and the Doctor call and enter : a sinister figure enters a house, iris-out : in long shot with screen blank except for small iris circle in top left hand corner a woman screams for help : close-up emphasises : in long shots the murderer runs out, but police come from all directions and seize him. He is taken to the police station (again Officialdom sits on a very high stool !) and accused energetically : a close-up panning shot with horizontal oval mask indicates the vociferous police.

Meanwhile in the caravan Dr. Olsen asks Caligari to awaken Cesare, but is ignored. A messenger hands Francis a sheet stating that the man responsible for the recent two murders has been taken whilst attempting a third. They proceed to the police station, where the man strongly denies implication in the previous two : the long shot closes with eccentric iris-out on Francis at one side of the frame, and he is sorely puzzled. Meanwhile Jane visits Caligari in search of her father, is shown Cesare, whose eyes open and stare burningly at her, and she runs away in terror.

Then comes one of the finest sequences in the film . . .

a. TITLE Late that evening.
b. L.S. Jane, sleeping in a huge bedroom.
c. L.S. Cesare walks along beside the wall of their garden, a spine-chilling black figure of uncanny height.
d. L.S. (as b) Cesare appears in background outside the window . . .
e. M.S. (diamond mask) . . . breaks window and enters . . .
f. L.S. (as d) . . . walks up to bed . . .
g. C.S. (masked for black background) . . . stands with dagger poised . . .
h. L.S. (as f) . . . makes to strike, but stops.
i. C.S. (as g) He looks down.
j. L.S. (as h) He moves to touch her, but with a scream she awakes.
k. C.S. (circular mask) He struggles with her.
l. L.S. (as j) He struggles with her.
m. C.M.S. (circular mask) The same. She screams for help.
n. L.S. (as l) He seizes her and lifts her up.
o. L.S. (fringed) Two members of the household awaken.
p. L.S. (as n) He carries her away with trailing bedclothes, through the window.

The construction of the above approaches perfection, and for 1919 is quite remarkable, being on a plane with the best of D. W. Griffith's cutting. The only continuity error occurs between shots *d* and *e*. It will be noted that the editing plan is based on the main long shot, that is shot *b*, which is identical in set-up with *d*, *f*, *h*, *j*, *l*, *n* and *p*. The gleaming dagger blade in shot *g* is memorable (and fixes the guilt of the Town Clerk murder, which we saw in shadow). Shot *k* is filled with deathly fear, black and white struggle in a turbulent composition. Shot *o* provides a wisp of comic relief. Shot *p*, with the trailing white,

(Shot c in second excerpt from scenario quoted.) The decor in this garden scene is as remarkable as in the rendering of rooms and buildings. Again light and shade are beautifully balanced, and full emphasis is thrown on to Cesare's black figure.

is impressive. The sight of the broken window is somehow horribly suggestive of inescapable death.

Shots of Francis spying on Caligari, who can be seen sitting beside Cesare, are cut in. Then in a thrilling long shot, fringed with an irregular oval, Cesare walks on nightmare roof-tops carrying Jane. He is chased, and drops her. Getting away, he collapses in a deathly ravine.

A long shot of Francis and her father with Jane mixes to mid-shot of the same. She accuses the somnambulist. Francis hurries away. Iris-out closes on Jane. An eccentric iris-in (misused on this occasion) opens a L.S. of the police station. Francis asks the police to come again to Caligari. They are refused entry, but break in and carry out the cabinet, and they find that the Cesare lying in it is a dummy: Caligari gets away.

Francis trails Caligari up to a door bearing the inset legend: Nursing Home: Doctor Sonnow (16mm. version gives Lunatic Asylum). In the main hall he enquires after a patient named Caligari and is taken to the Principal. The design of the main hall is a fine achievement. Whilst it lacks positive distortion as applied to all the other settings of Francis's tale, it is none the less sufficiently angular and ominous to take its place without breaking the continuity of the design.

The forbidding door of Dr. Sonnow's room is shut behind Francis and we look down a long narrow room of fantastic shape and disorder. Then in close-up the doctor raises his head and we recognise Caligari. Francis dashes from the room, down the corridor, back into the main hall, where he collapses into a chair and tells a group of attendants what he knows. And that night they search the doctor's books:—a mix to the action described in the diary is well achieved by a double eccentric iris; the mid-shot of the readers irises out in the bottom left hand corner while the succeeding long shot of the doctor at the desk opens in the top right hand corner. A somnambulist is brought in, and the doctor goes into raptures over him. The same double iris method is used as Francis turns to another page in the diary.

Continuing the flash-back, the doctor in frenzy declares he must become "Caligari." In a remarkable shot in the garden, carrying aloft a book, the doctor cries out while the legends appear across the frame (done cartoon-fashion) appearing letter by letter, "du Caligari" . . . and "du musst Caligari werden" ("*You must become Caligari.*") A ludicrously incongruous expanding title has been casually added to the 9mm. version.

As Francis and the others finish reading, news is brought in that Cesare has been found. Accordingly he is brought in to the doctor who first leans sadly over him, then wildly attacks the nearest man. He is put in a straight-jacket and, in a final long shot, led struggling into a cell whose walls are covered with a horribly livid design suggesting a malignant fungus: a cut-in close-up shows his writhing movements on a mattress under this nightmare pattern. The long shot ends, and ends Francis's story, with an iris-out on Francis looking at the massive door, with its weird scrolls, which has shut out this doctor Sonnow who masqueraded as Caligari.

A slow iris-in on Francis and his companion in the bleak garden recalls the set-up of the first shot in the film. Francis adds that the madman has never left his cell. His companion complains of the cold, and suggests they return to his guests. They move away; cut to long shot of the main hall of the Nursing Home. But now it is filled with people: there is Jane, picked out in fringed medium close-up, sitting regally aloof; she looks round at Cesare, standing child-like nearby. A bearded man is talking aloud with passionate gestures. A woman plays a non-existent piano. Francis and his companion enter. Francis points out Cesare (the frame is masked to a thin vertical strip for the detail mid-shot) and then, on tenderly approaching his beloved Jane, receives her sad reply:—"*Alas! Queens such as I have no right to choose according to the dictates of our hearts.*"

Then in long shot Dr. Sonnow enters, and in two cut-in close-ups we realise just how Francis's warped mind has conjured up the evil Caligari from the features of the kindly doctor Sonnow. Francis shouts:—"*You all think I'm mad! It's not true! It's the Doctor who is mad!*"—and rushes at the doctor, and attendants appear with straight-jacket, and he is led away into a cell identical with that shown at the end of his own story except that the walls are free of the evil pattern. And the doctor bends over him, then straightens up, and says:—"*I understand his madness. He thinks I am Caligari. I will cure him.*" The shot ends with a delayed iris-out on the thoughtful and kindly face of the doctor.

Contemporary releases consisted of numerous stellar vehicles, stars represented including Pola Negri, George Arliss (*Green Goddess*), Matheson Lang, Pauline Frederick, Tom Mix, Bebe Daniels, Betty Compson, Betty Balfour (*Squibs' Honeymoon*), Wallace Reid, Gloria Swanson, etc. In the face of these one is not surprised at the trade paper's summary:—

The production is undoubtedly one of extraordinary imagination, and of very considerable

interest if not one that is likely to make a wide popular appeal.

In "History of the Film" one reads :—

CALIGARI *seems to mark one of the extreme limits of cinematography, a point where it merges with painting itself . . .*

Consideration of the production phases is illuminating :—

Scenario. This is a well-knit and workmanlike job without special inspiration. The material of the story is well arranged.

Direction. Robert Wiene was undoubtedly inspired. He failed to repeat his success in 1923 with *Raskolnikov* (Crime and Punishment), but made a good straight-forward thriller in 1924 with Conrad Veidt, *The Hands of Orlac*. *Caligari* was his flash of genius, in which he completely achieved cinematic fame.

Acting. The success of this phase has been noted earlier. The supporting players have obviously taken detailed instruction from the director, who probably collaborated with Krauss in working out his arrangements. Krauss differentiates between Caligari and Sonnow with easy assurance, but with confidently contrasted gestures; Caligari jerks, Sonnow flows. In make-up, too, Caligari has lines, points, corners, whereas Sonnow has curves. Veidt manages to put more than a trace of pathos in his character of the helpless somnambulist. Wisely, Lil Dagover's part was kept small; she succeeds most in the tragic epilogue, with her pathetic, regal delusion. All the players are remarkably successful in looking as though they belong in their extraordinary surroundings.

Photography. The photography is quite objective and sharply focussed from foreground to background throughout. A wide-angle lens was used for all the long-shots—a device revived in the recent *Citizen Kane*. A stationary camera permitted proper pictorial compositions. The one panning shot is a close-up. Masking is extensively used, in some cases to assist the composition. The eccentric iris-fades are effective: this fashion reached its peak about 1920 but died later. It is due for revival, perhaps as a much-heralded discovery.

Montage. This phase is the least effective and its possibilities obviously were beyond the grasp of the director. However, the cutting is free from errors and is fairly concise. An example of the effective inclusion of a lengthy shot for emphasis is given above.

Design. This is clearly the feature of the production. The enthusiasm which must have existed in the studio for these amazing creations appears to have been a force binding the production phases into their solidity of achievement. There is more in these designs than meets the lay eye. Symbols of the German expressionists apparently add to the weird subjective power of this brilliantly reproduced madness. The chief tribute to the cameraman is that he has lit these queer sets without covering them with shadows that would have ruined the illusion.

Titles. The wording depends on different translators for the 9mm. and 16mm. versions. About the wording there is no point of special note, but a moment's thought will suggest that to set them in ordinary type is wrong: and in fact the original German and French versions had the titles written in uneven, distorted, angular characters on a broken background: the effect was amazingly powerful. The same applied to the inserted close-ups of notices.

General. The original was tinted: blue for night scenes and some parts amber. The photographic quality of the available versions tends to soot-and-whitewash, to a degree in excess of that in the original. So popularly successful was the film in France that it was continually being revived, either wholly or in part. The present writer saw the first part, up to Cesare's fall into the ravine, at Studio 28, Paris, in August, 1938, the print shown being practically new.

Caligari is indeed a memorable masterpiece. The horrors of Francis's grim tale rise in crescendo, only to be capped by the realisation that it is a madman's horrible delusion. Except possibly at the first close-up of Cesare and the over-acted long-shots remarked upon above, the film is completely free from unintentional comedy—rare in a 23-year-old drama. This is a film of which fragments linger in one's memory to an unusual degree: the sinister, unkempt garden; Caligari's black and menacing figure; Cesare, stealing along the wall of Jane's garden; the unnaturally broken windows; the roof-tops; and then the pictures from the diary, the indescribably horrible madman's cell, and the hall of the asylum, full of dread implication.

Caligari points along a Cinema by-way still unexplored. It stands some way along a turning which every other director has passed by. Its unreality is tonic; its unusual elements, fascinating. It stands very high in the list of Famous Films, and is undoubtedly one of Cinema's outstanding additions to modern art.

* * *

Cue Sheets giving records and timing for Musical accompaniment to *Caligari* and other films reviewed in the "Famous Films" series, may be obtained from Mr. F. Bennett, 29, Fairfield Grove, Charlton, S.E.7. The charge to cover expenses for these would in no case exceed one shilling per film, and would normally be in the region of sixpence, postage included.

NEW CINE CLUB

Welcome to the Oswaldtwistle Cine Club, a new venture recently started by Mr. Walden Wise, 12, Ripon Road, West End, Oswaldtwistle, Accrington, Lancs.

The club has already joined the Federation, and although members are at present few, they have got some raw stock between them which they propose to use for the making of an instructional film.

The hon. sec., Mr. Wise, has had six years' experience of cine societies, first with the Hyde C.S., and later with the now disbanded Blackpool F.S.

Lone workers in the locality are cordially invited to contact him.

Don't forget all waste paper is urgently needed to help our war effort.

"DO IT YOURSELF!"
practical ideas for the handyman

COMPLETING THE HOME-MADE CINE TRIPOD

In each issue our contributor supplies worth-while ideas: things to make and things to do. Suggestions for gadgets are welcomed.

By G. A. GAULD, B.Sc.

IN the last issue the design and construction of a non-telescopic tripod was discussed. We got as far as the construction of the main tripod head which couples the three legs together, but details of the camera mounting were left over for further investigation in this number.

Gear driven pan and tilt heads soon made their appearance in the professional movie world because a gear driven movement was the only satisfactory way of controlling the comparatively weighty 35mm. cameras. It is not therefore surprising to find that gear driven heads soon followed in the substandard market although the need for them, in view of the small weight and dimensions of substandard cameras, is correspondingly less. If the substandard equipment is to function smoothly and efficiently, being of smaller size in every way, it must be made with great precision. Consequently such gearing is outside the scope of the ordinary amateur workshop. Whereas a rigid tripod is essential whatever the size of camera in use, the lack of a gear driven head is not at all serious. Let us examine the whole question and see if a simple modification will give equally satisfactory results.

The need for a tilt movement for use *during filming* is confined entirely to the type of shot in which, perhaps, a cathedral tower is portrayed. The shot opens on the base and slowly lifts up to include the top. But how often does such a shot appear in the everyday movie? Like the pan, it is a technique which can be greatly abused, resulting in those horrible "hosepiping" effects so often seen in the amateur's early films. An initial tilt given to the camera *before* shooting is another matter. If, however, the tripod is set up so that two of the legs project forward, equally, on either side in the direction of the shot, while the third leg projects backwards towards the cameraman, it is usually possible to get a perfectly satisfactory tilt by a suitable adjustment of the back leg, the final fine adjustment being obtained by digging the toe of the rear leg a little harder into the ground, provided the ground is sufficiently soft. In the same way a downward tilt is obtained by setting one leg forward in the direction of the shot with the other two to the rear. By setting up the tripod in either of these two ways it will be perfectly stable and no matter how great the tilt required, will have no tendency to tip over. Consequently there is no very great objection to omitting a tilt movement altogether. This does not apply, however, to the pan movement.

All substandard cameras have a recessed bush into which is screwed the projecting screw of the camera mounting on the tripod head. Consequently, when screwed down firmly, the camera is fixed in a certain direction in relation to the legs of the tripod making the system of setting up as described above impossible. Furthermore, to sight it accurately on any given subject, the whole tripod must be rotated bodily to bring the camera sights into line, a clumsy procedure to say the least of it. The provision of a simple camera mounting pivoted about a vertical axis with a suitable locking device will eliminate all these difficulties. The tripod can be set up in the desired position and the camera brought to bear on the subject by a rotation of the mount, then locked in position, ready for the shot to be made.

With the addition of a friction type braking effect to give some control over the pivot movement and by providing an extension handle of adequate radius, a perfectly smooth pan can also be carried out, eliminating the need for complicated gears and other unnecessary gadgets. The use of the pan movement *while filming* is strictly limited; it is its value in the initial set up that is of importance.

All these requirements are met in the simple design shown in Fig. 1. The pivot comprises a length of $\frac{5}{16}$" diameter steel rod which passes through the hole already drilled in the tripod head. It is screwed at the lower end to take a wing nut. (The finer B.S.F. thread is to be preferred). The other end is shouldered down to $\frac{1}{4}$" diameter and screwed $\frac{1}{4}$" Whitworth, the standard

thread for nearly all movie cameras. A brass disc is bored and tapped and screwed hard down against the shoulder of the spindle, leaving about $\frac{5}{16}$" of thread projecting to enter the camera tripod bush. To get a satisfactory job, the disc should be turned, bored and drilled in one set up in a lathe. If the spindle is also shouldered down and screwed in a lathe, the disc will be mounted perfectly square and will therefore run true as it rotates, and bear evenly on the flat top plate of the tripod head. Both jobs will be carried out for a small sum at a local garage or machine shop.

The mounting is completed by a short length of brass tube, an easy fit on the spindle. The spindle is made long enough to bring the wing nut to an accessible position below the head and between the tripod legs. The addition of spring washers at each end of the tube gives a satisfactory friction brake, the adjustment being controlled by the wing nut. If the wing nut is screwed up tight, the spindle will lock into any desired position, thus complying with all the requirements already set forth.

The pros and cons of telescopic legs were discussed in the last number. If the extra labour involved in their construction is deemed worth while, then it is only a matter of deciding on a suitable design. I shall, no doubt, lay myself open to criticism by suggesting any one particular design because both commercial models and amateur designs employ a hundred and one different systems, each having its own particular advantages. Our problem is, as usual, to find a simple but efficient design within the scope of the ordinary amateur workshop. All I can say is that this design has given me satisfaction and I will have no objections if each of my readers develops his own according to circumstances and taste.

The general construction of the legs, using hardwood spacers and tie rods described for the rigid legs, is followed here. Two pieces of brass sheet about $\frac{1}{16}$" thick are cut and bent to size, then bolted to the top of the lower half of each leg to form an easy sliding grip which will travel smoothly up and down the upper half of the corresponding leg. The grip or locking control is mounted at the bottom of each upper half of the legs.

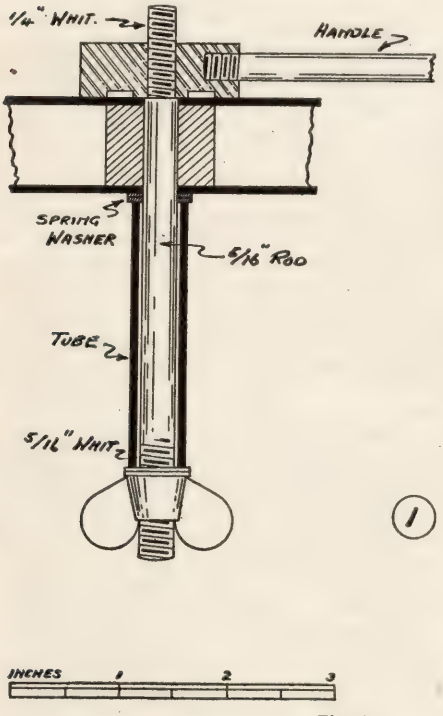

Fig. 1.

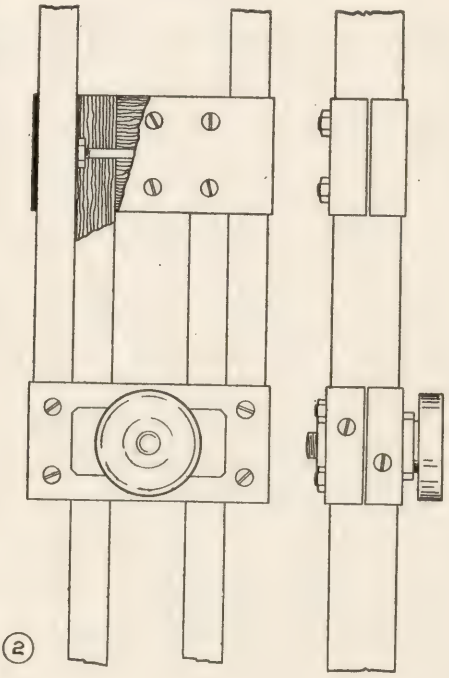

Fig. 2.

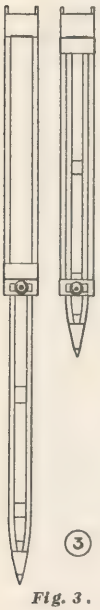

Fig. 3.

Similar brass plates are cut out and bent to shape. To the back plate an additional stiffener is added, about $\frac{1}{8}$" thick and sweated on with ordinary soft solder. A hole is then drilled through the centre and tapped to take a $\frac{5}{16}$" B.S.F. bolt.

The front plate is made up in the same way, but a hole corresponding in shape to the "stiffener" is cut out as shown in Fig. 2, using the method I have described before in these pages in which small holes are drilled all round the inside of the opening, the "tangs" cut through and finished off with a file. A piece of brass sheet—"hard" brass preferred, $\frac{3}{16}$" thick, is next cut to shape so that it is a neat fit inside the hole already cut out of the front plate. It is drilled in the centre $\frac{5}{16}$" clearance.

It will be obvious from the sketch that as the bolt is tightened so the $\frac{3}{16}$" loose piece is pressed down on the members of the lower leg, gripping them and locking the two halves of the legs together in any desired position.

A knurled brass disc about $1\frac{1}{2}$" diameter and about $\frac{5}{16}$" thick will make a neat knob to each bolt. These can be turned up, bored and drilled $\frac{5}{16}$" B.S.F. by the same local garage. For each fitting a length of $\frac{5}{16}$" screwed rod will be required. A little solder is run into the threads in the knob and one end of the screwed rod tinned. Both are heated over a gas ring and with the aid of two pairs of pliers, the rod is screwed into the knob until the end of the rod is flush with the face of the knob. When they have cooled off the knob will be found to be thoroughly sweated on and securely fixed to the screw, thus completing the bolt.

The complete legs are shown in Fig. 3, but as both the head arrangements and shoes are similar in design and construction to those already described for the non-telescopic legs, they call for no further comment here.

FROM DOWN UNDER

We were pleased to note from the latest issue to be received of *The Cameraman*, official organ of the Metropolitan C.C., 970, High Street, Armadale, Victoria, Australia, that the club is still going strong. The blacking-out of 200 sq. ft. of glass and the re-building of the theatrette are the major items of interest. Programmes of sound and silent films are given at regular intervals. It is announced that small supplies of Pathe stock are being regularly received by local dealers.

HOW YOUR REDUCTION PRINTS ARE MADE

(*Continued from page 259*)

powers of the emulsion and are less liable to be affected by irradiation and other phenomena. Only optimum conditions of exposure and development can give truly acceptable results, yet at the same time the development requirements of the pictorial record which is impressed upon the same film have to be taken into account.

For these reasons the control of printing light intensities and of gamma in development is carried out on a scientific basis, and it is found essential to have scrupulous regard of these technical requirements if a consistently high standard is to be preserved.

The sub-standard sound-film is the result of highly developed technical processes, and is worthy of a degree of respect which I am afraid from past experience it rarely receives.

The writer is in a position to know what a great amount of development and research work is being put into this process of the preparation of sub-standard sound-films. The user can play his part in this development in two ways.

First of all he can see that he always sets up the best possible projection conditions under the circumstances in which he is called upon to give a show, that his apparatus is always kept at the pitch of efficiency, that all parts which will come in contact with the film are watched jealously to guard against any damage to the film, and that the film itself is handled with proper care.

Secondly, he can always take care to favour those libraries whose products are of a high standard of quality, to the exclusion of those who are content to issue films of a mediocre standard. In some cases one library will issue films of both types. Then a word of commendation for the good ones and of criticism for the bad ones, will go a long way towards guiding the future choice and policy of the persons controlling the library. Remember that, if they send out inferior reels without receiving such criticisms, they will be justified in imagining that the recipients are quite satisfied with what they are getting. It is largely for that reason that film libraries before the war were, with notable exceptions, not praiseworthy for the technical quality of the prints issued.

Criticism on the part of private users of these films to-day is not merely a selfish action confined to one's own personal interests. It will have a beneficial influence on the future development of what I am convinced is destined to become one of the most potent social instruments for immediately future generations.

Looking Backward by R. B. Foxcroft

THIRTY years ago I became the possessor of a real home cinematograph. Yes, that was the name we used in those days, not the sloppy word, "cine," although there was considerable journalistic argument as to whether it should not be 'kinematograph' and likewise 'kinema.' Prior to that time, as a very small boy, I had had one or two magic lanterns and a toy cinematograph, but this was a real cinematograph with top spool, rewind and maltese cross movement.

After a few hours of admiration I dashed off to the local toy dealer and for fourpence I bought 20 feet of 35mm. film showing the art of wrestling. This dealer used to buy extracts of long length from films and then sell them out in various lengths according to the means of the buyer. For the convenience of those owning the toy machines he would join up the film to make a continuous length by heat. Somehow I think he did it with a hot iron ; he made very good joints. Whether he served an apprenticeship to welding I cannot say, but although I tried the same experiment, I must confess that I was never successful.

However, I soon got tired of watching this film with two strong men tossing each other (twice) and rolling over (once) so I purchased a 200 feet length of a military funeral. From the cellar I migrated to a large outhouse which had formerly been a coach-house and there began the development of my first home cinema. Old carpets and furnishings were "borrowed" from the house, a stage was erected with a fixed screen, wooden forms for seating were obtained, and then a 10 volt dynamo (5/-), with five ten volt lamps glowing in the auditorium, completed the job. The dynamo was driven from an old bicycle with the tyres removed. Usually a member of the audience or myself had to pedal the cycle until the audience were seated and the show commenced—and we didn't need a dimmer for the lights !

I soon found that turning the handle of the projector was a very arduous affair owing to the inefficient take up—there was no bottom sprocket—so I fixed up a wooden box in front of the projector and the film fell loose into the box. In the good old days no one bothered about "rain" or marks on the film, so I regarded the result with satisfaction. My illumination was now no longer good enough so I took the acetylene lamp off my cycle and used it in the lamp house. Probably due to the intense heat generated in the lamp house the carbide container often sprung a leak and burst into flames, but I can truthfully say that I never burnt a piece of 35mm. in the whole of my career. Yes, there must be some fairy watching over small boys.

Then came the day (pre 1914) when I found that I could buy Topical Budgets, Eclair Journals and Pathe Gazettes at prices from 1/9 to 2/6 from the film agencies. My first Pathe Gazette contained "Mr. McLean Lands His Water Plane on the Thames" (what an event !), and also a scene of a burning ship, among other subjects.

Many readers will recollect that pictures depicting fire scenes were often tinted red. In fact, tinting was very common and this particular print was tinted very deeply. Consequently the screen illumination was rather poor, so I overcame the difficulty by dipping the length in a bucket of water until the appropriate amount of dye was washed out. The film was then dried and did not seem to suffer by this treatment. Subsequently I used this method on many tinted prints with satisfactory results.

The Eclair Journals I remember particularly for their bright, contrasty pictures. The Topical Budgets often seemed as though they were exposed on a dull day in Wigan. Nevertheless, it says much for the quality of the film base that, almost twenty years later, these films were capable of being projected, although no care had been taken as regards their storage.

Early in 1914 I bought a 35mm. film showing army manoeuvres. The sub-title was : "The King Visits His Troops." At that time I was on friendly terms with the operator at one of the local cinemas. On my weekly visits to the cinema I was permitted to enter the "royal" chamber and, to my great delight, allowed to operate the projector under his supervision. As the motor driving the projector was a secondhand affair and usually out of order, no doubt he welcomed a relief from the constant turning of the handle.

Then came the Great War, and I mentioned to my friend, the operator, that I had a film which ought to be popular as it showed our troops in supposed action against the enemy. He asked me to bring it along and so I dashed home for it with visions of free passes for weeks. It was eminently satisfactory since, by omitting the title, there was nothing in the sub-titles to show that this was a picture of manoeuvres—the sub-titles referred to "our troops" and "the enemy" —and it had a week's run. As there were

(*Continued on page 273*)

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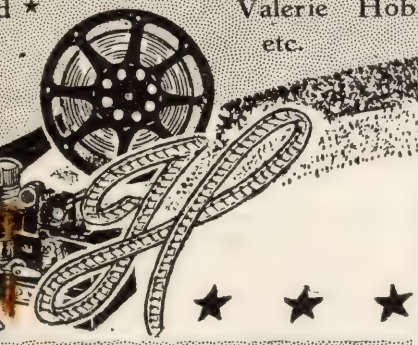

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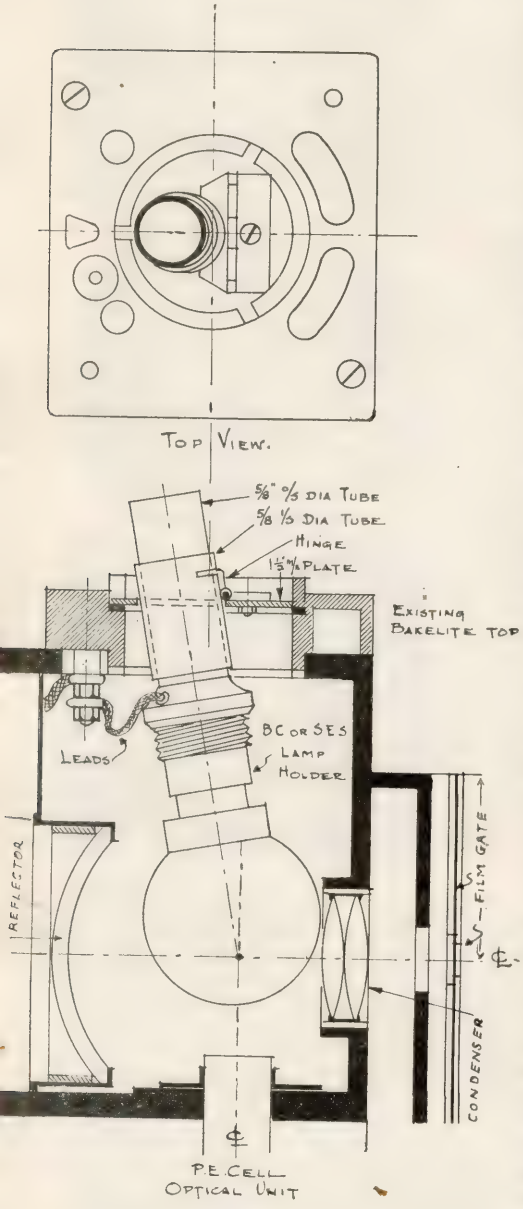
Emergency Lamp for the Pathe Vox

By HAROLD L. FOX



RESTRICTION in supply of suitable lamps is no doubt causing many amateurs some difficulty in maintaining their projectors in service, so this article describes how this is being surmounted during the present period of waiting for replacements.

Designers of certain modern projectors do not leave any latitude in the design of lamp houses for the substitution of alternative lamps, and in the case of the Pathe Vox 200 watt model the close proximity of the filament to the projection condenser (12mm.), and P.E. Cell optical unit (20mm.), rules out the use of any alternative standard projection lamp of high power, so one is compelled to search amongst the lower wattage lamps for a suitable alternative.

This is found in the Class F series of gasfilled projection lamps and is of 12 volt 24 watts rating, having a bulb diameter of 38mm., an overall length of 60mm. with light centre at 50mm. from cap, and a straight filament 6mm. long.

The position of the filament therefore allows the lamp to be used in the horizontal position, in perfect focus, without touching either condenser, and on removal of the reflector and fitting in a suitable holder a sound picture can be projected in the usual way, with full sound but reduced intensity of illumination.

The writer was fortunate in having a lamp of this type in his possession, together with a 12 volt transformer, spare condenser and other materials for preliminary experiments. It was, however, found that the omission of the reflector was of some consequence when mounting the lamp in a horizontal position, so the design was finally based on the use of the lamp in a vertical position.

Now the bulb diameter of the lamp in this position will not allow it to be brought into focus with the existing main projection condenser in use, so this was replaced with a condenser of different type, which just fitted without projecting into the light chamber of shutter race. As this came out of the scrap box, it is doubtful whether it is the correct type of focus, but it functions efficiently and as a result the fitting described and illustrated was adopted.

In the writer's case the lamp had a small bayonet cap (S.B.C.), but I believe the usual supply is small Edison screw (S.E.S.), so a suitable holder was soldered into the end of

a piece of $\frac{5}{8}$" outside diameter tube 40mm. long, sliding inside a tube of similar inside diameter 25mm. long, passes through an 18mm. hole in and is hung by a solid brass hinge to a 1½mm. brass plate with three prongs exactly fitting the original lamp seating, into which it should be a tight fit.

In the case of horizontal fitting the brass plate is replaced with a tube and cap 55mm. diameter and 50mm. long pushed into the reflector socket.

The telescopic tubes and hinge, which must be rigid and stiff in action, allow universal movement in a vertical plane, but in the original assembly and setting up accuracy is essential to secure correct alignment of the filament on the optical axis.

In preliminary adjustment with lamp extinguished, the reflector is removed and looking through the projection lens against a light, the lamp is raised or lowered until the filament is seen to be in the centre of the gate. Slight lateral displacement can usually be corrected in the case of S.B. holders by taking advantage of the slight tolerance usually found in this type of cap and holder. For sound, the lamp is moved slightly backwards or forwards on the hinge until the optimum intensity of image of the slit is seen on a piece of film threaded round the reading drum, or better still, adjusted during actual running of a sound film.

Coming to the question of current supply, the standard lamp takes 15 volts 13 amperes, as against 12 volts 2 amperes required by the alternative lamp specified. Although in the original adjustments a separate transformer was used, it is found that the original lamp circuit can be used with safety, and subject to the limitation of shortening the life of the lamp on account of over-running, but with the advantage of considerable increase in brilliancy of illumination, the lamp appears to stand up to the increased voltage applied. Where the supply is only 200 volts, as in the writer's case, the input voltage on the intermediate transformer can be reduced to 95, instead of the normal 110, and so a certain amount of control obtained.

It will be realised that from 200 watts to 24 watts is a big drop, but smaller filaments can give remarkably efficient results, as instance the smaller Pathescope models, and given a clean white screen illumination is sufficient for an average room with a picture size up to 36" x 27", while the volume of sound is not greatly affected if the filament is accurately centred, and may be more than usually required. Best results are, of course, obtained with printed films or reversal films correctly exposed.

(*Continued on page 280*)

Looking Backward

(*Continued from page 269*)

no films yet available of the fighting abroad it was quite a success.

My reward from the proprietor was one free pass to see the show again, and I must confess that even at that tender age (13 years) my business instincts were badly shaken by this hiring fee.

About this period of my life I must confess that my whole being centred round things cinematic. As most boys want to be engine drivers so my ambition was to be the owner of a cinema. My pocket money went in buying films and odd copies of the "Kinematograph Weekly," and I used to plan cinemas with wonderful interiors and air conditioning plants, plus a super operating chamber with lots of fresh air and light.

The operating box at our "local" no doubt influenced me as regards the operating chamber, for it was merely a large iron box. I remember at the opening performance of the cinema the front portion of the box fell down on the floor. Luckily no one was seated in front of it but the police made an inspection and the proprietor in due course was fined for permitting the performance to proceed.

After the Great War I became the owner of a 35mm. projector made by Houghton-Butcher ; this was a much stronger job, with an efficient electric light, and so the old machine went to the scrap heap, together with the old wooden box. Then later came a Gaumont Chrono, a simple professional type machine, with a 1000 watt lamp. Although these lamps had a quoted short life I still possess the projector and the lamp, and they are both in good order.

Then about nine years ago I entered the sub-standard field, with its many advantages for the home movie man but the comparative disadvantage of high prices. I have since journeyed through 9.5mm. to 16mm. and 8mm. silent to sound, and I must still confess that I still get a "kick" when the postman delivers a new film, or a spool of colour film arrives from the processing department.

When I look back I cannot recollect that I ever purchased or hired a 35mm. drama or comedy beyond a short comedy by the renowned John Bunny or Charlie Chaplin. My choice was always travel, news or interest subjects. Why are these so few and far between in the professional theatres ? Before the war there must have been many good films of this type, produced in other countries, which could have been given an English commentary, yet I cannot recollect having seen more than half-a-dozen of that nature.

TRACKING it DOWN

Secretary: **C. LESLIE THOMSON, B.Sc.**

Secretary's Report The notes on exciter-lamps in the last issue appear to have aroused interest, and several readers wrote for details of the AC/DC High-Frequency Feeder. For some reason, the majority of enquiries are concerned with the electrical side of talkies, and in particular there have been a surprisingly large number on the matter of pre-amplifiers. In many cases individual circuits were suggested, and I feel that it may be permissible to anticipate further queries by giving details of a compact pre-amplifier unit, self-contained and fed by all-dry batteries. This unit has been specially designed for amateur talkie work, and may serve as a supplementary answer to the various readers interested. A description is given after the Replies to Readers section.

As reported in our last meeting, Mr. Desmond Roe is one of the "T.I.D. Consultants." A recent query on S.O.F. recording brought forth such a comprehensive reply from Mr. Roe that we felt it would be valuable to many other experimenters. Unfortunately, space does not permit its reproduction here, but the original querist—Mr. Blair—has very nobly prepared two duplicates of Mr. Roe's notes and diagrams. These copies are available on loan to interested amateurs, and we expect a brisk demand. The notes cover methods of modulation, drives for recording cameras, and mechanical considerations. Requests will be dealt with in rotation, and please remember the Rule of T.I.D.—All enquiries to be accompanied by a stamped envelope!

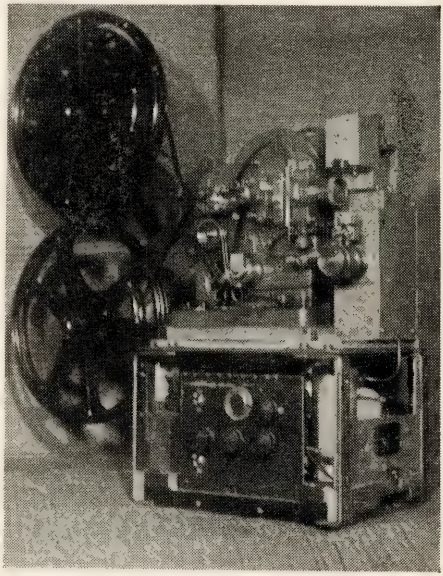
Mr. Pegg wrote, describing his own version of the Hall-200B conversion, including a curved sound-gate from which the film can be removed part-way through its run, if desired.

Mr. Anson has sent in very full details of his Bolex conversion, which takes both 16 and 9.5 sound films. It is a very complete outfit, and as may be seen in the photograph, the sound-head is in front of the machine, space being ingeniously saved by the rather unorthodox method of passing the exciting light to the scanner "through" the beam from the picture-lens.

Replies to Readers And now for a selection of the questions asked during the past quarter. As mentioned before, these are not necessarily exactly as sent out originally, and may be compounded from several similar queries. "Second thoughts," too, are included.

Q. ***Do you consider that a great difference in tone can be procured by using a different speaker?***

A. Yes. It is a matter which many experimenting amateurs are apt to overlook, apparently believing that any make or type of moving-coil speaker is suitable for talkie work. Most modern speakers are good, but there is no doubt that many "borderline"



Mr. Anson's outfit, with blimp-case removed.

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outfits could be vastly improved by a change of speaker. In a general way, and without mentioning any names, the "crisper" the speaker, the better it is for sub-standard talkie work.

Nearly all early moving-coil speakers were purposely designed to give a maximum bass response in conjunction with radio apparatus. To this end the diaphragms were often of heavy, thick paper, supported by soft materials such as chamois leather. This tendency still exerts its influence, and some modern speakers will make the projectionist's life a misery.

A "crisp" speaker may be recognised by the cone being of thin, hard (almost "brittle") paper, and being supported in a stiff, springy mounting. If gently tapped with the back of the finger-nail, the cone will give a high-pitched sound.

Apart from the characteristics of the speaker, there are other important factors affecting the clarity of sound. An unsuitable ratio of output transformer will give "woofy" effects. The baffle should be substantial, but need not be as large as for radio use. There should be a clear space of several feet between the back of the speaker and the wall, otherwise this will reflect the sound and confuse the ear. If space is limited, a large soft cushion placed between the wall and the speaker will help considerably, by absorbing the sound from the back of the cone, and allowing the "front" sound to assert itself.

Horns ("projector speakers") are useful under certain conditions, as they give at the same time clearer sound, and greater volume from the same input. Unfortunately, they are very directional, which means that more than one unit must be used to "cover" the audience.

(Whilst on the subject of loud-speakers, one correspondent wrote asking for advice on a home-made amplifier which was giving very poor volume. The circuit appeared to be perfectly satisfactory, and it was only after a headache-producing session with the problem that it was noticed that the speaker-field, which was being used as smoothing-choke, had a resistance of 25,000 ohms. Such a field is not intended to be used in this way, but should be connected *across* the H.T. supply, which must be smoothed by a separate choke. If it is to be used as a smoothing-choke, the resistance of the field should be 2,500 ohms., or less, if a single pentode is used in the output stage, or about 1,000 ohms. with a push-pull output. This "drops" the H.T. by about 100 volts, which is provided for in most circuits—e.g., the mains transformer supplies 350 volts, to give an eventual 250 volts.)

Q. ***Do you recommend the use of second-hand P.E. cells, such as one occasionally sees offered at attractive prices?***

A. Only if you know exactly what you are buying. Such cells are usually ex-professional rejects, and may be in very poor condition electrically, although to outward appearances perfectly sound. What is more important, these cells are nearly all of the vacuum type, which require at least one stage of amplification more than the gasfilled type. The benefit of the vacuum type, for professional use, is its good response to the very high frequencies, which is more important than high output. This does not apply to the majority of amateur outfits.

The two following questions were answered by Philip Jenkins, our expert on laboratory standards and technique. (Readers will remember that there is a standing invitation to anybody to join our group of consultants, to help answer questions in whatever branch of sub-standard talkies he or she may be particularly experienced.)

Q. ***I read in a book on sound projection that the sound is 19½ frames in front of the picture, and have planned my 16mm. conversion accordingly. Now the sound seems to be slightly out of synchronisation. Why?***

A. Although 35mm. film is printed with the 19½ frame interval, all sub-standard film has the sound advanced a further six frames. That is, 16mm. and 9.5mm. sound is 25½ frames ahead of the picture. The reason for this apparent complication is that with sub-standard film the actual length of film between sound and picture would otherwise be too short for convenient construction of the sound-head, and the extra six frames give a very useful 1¾" of additional working-space. In practice, there is a small tolerance in synchrony, so that 2-3 frames on either side of "exact" is rarely detectible as an error.

The next is from an experimenter who has apparently fallen foul of some of the early films, which were occasionally lamentably inaccurately printed.

Q. ***Is there any positive way in which I can tell whether my 16mm. films are printed out of sync.?***

A. Not always: but copies printed from "release" (professional) negatives, which are provided with synchronising marks both on the "leader" and on the "tail end," will show a cross or a black circle in

one of the frames of the end-lead. Examination of the sound-track should show the edges of the cross six frames ahead. In some films there will be instead a clear strip, one frame long, in the sound-track. Apart from this check, one may be able to determine accurately the relative positions of picture and sound by means of a magnifying-glass, if there is some suitable passage in the film—e.g., a close-up of a face speaking. Such a test, however, is no guarantee that the entire film has been correctly printed, as not all shots can be relied upon as having been accurately edited.

Self-contained Pre-amplifier As mentioned above, this unit has been designed to meet an apparently widespread need, and is constructed entirely from components and materials which can be obtained without much difficulty at the present time. The total cost, including valves and batteries, and at current prices is just under £3 10 0.

The "All-Dry" type of valve was selected for several reasons: 1. It is more accurately standardised than many other battery valves. 2. It is exceedingly economical in use. 3 It is designed to give a high efficiency with only 90 volts H.T., which is also the figure required for most P.E. Cells.

The unit provides the polarising voltage for the cell, and can also be used with high-fidelity microphones, such as the transverse current and crystal types. It will feed the "pick-up" terminals of an ordinary radio, and has special provision to permit any type of set to be used—even "universal" sets with "live" chassis. The unit has its own volume and tone controls, and is completely screened—a most important point when dealing with high degrees of amplification. All components are non-inductive, so there is no risk of interference from nearby mains apparatus. 1/2-watt type resistors may be used throughout, and the small wire-ended condensers allow for simple and straightforward construction. The principal details can be made out from the circuit diagram (Fig. 3) and from the photographs (Figs. 1 and 2), and if one remembers to keep all leads as short as possible, the actual wiring should require no special description. An ordinary biscuit-tin—9" x 8½" x 4½"—

Fig. 1. "All-dry" self-contained pre-amplifier showing arrangement of chassis and batteries.

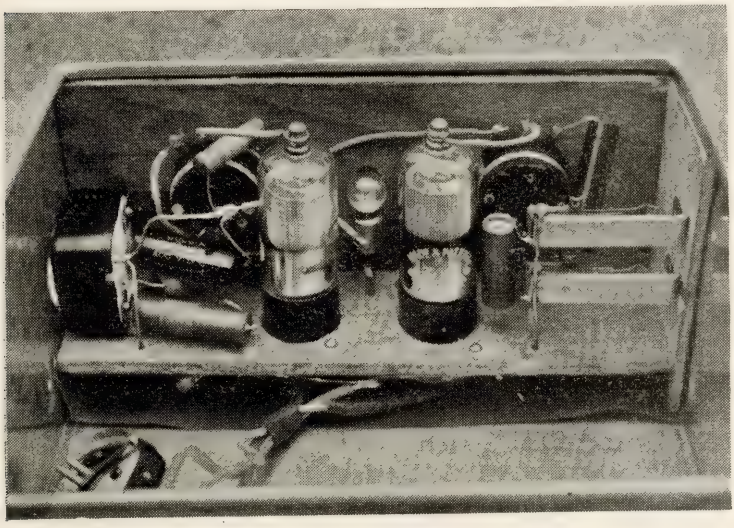

Fig. 2. The chassis, with output and input plugs, volume and tone controls, valves and pilot-lamp.

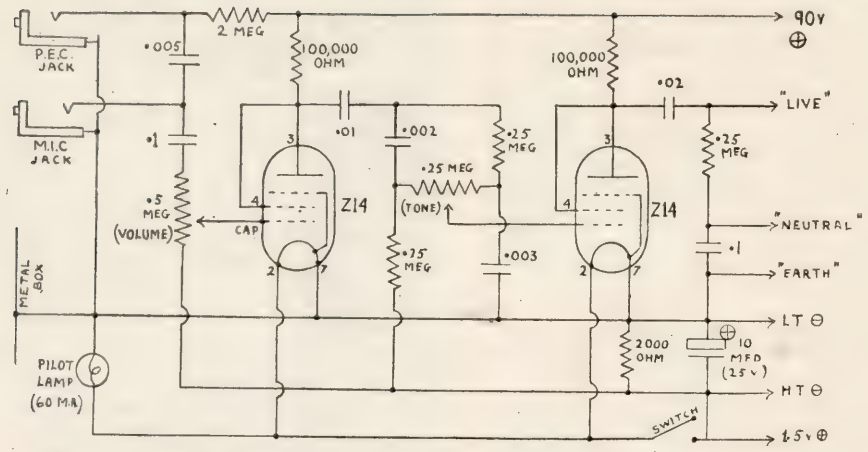

Fig. 3. Circuit diagram of p e-amplifier using two Z14 (H.F. Pento e) ı alves.

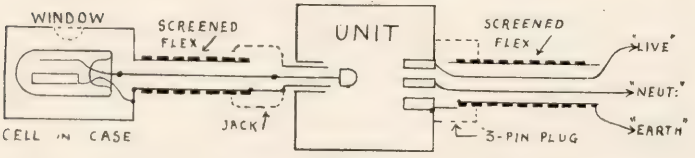

Fig. 4.

Fig. 4. Connections to pre-amplifier unit.

Fig. 5.

Fig. 5. Key to valve connection numbers. Base as seen from below.

forms the "cabinet," and neatly houses the amplifier and batteries.

The "chassis" (Fig. 2), consists of $\frac{1}{4}$" plywood, and is "bolted" to the cabinet by the necks of the controls and the jacks. (Incidentally, the volume-controls must have "non-live" spindles—i.e., no electrical connection between the sliding contact and the shaft.) A pilot-bulb is included, and although this takes as much L.T. current as a valve, it will soon repay its keep! The input jacks are of the simple single-contact type, and the output plug is a standard 3-pin 2-ampere model. Those not familiar with all-dry valves may find the following points worth noting:—They are microphonic—they pong when jarred—so it is an advantage to mount the valve-holders on small pads of sponge-rubber. They are delicate, and should be handled gently. It can be quite expensive to jerk one from its socket when the filament is hot! They do not give as great amplification as mains types, but the circuit shown will give rather more gain than a single mains H.F. Pentode (which requires 250 volts H.T., and takes a couple of watts in its heater!). Treat the baby valves kindly, and they will serve you well.

The batteries used will depend upon availability—those shown are a couple of "Alldry 2," and an "Alldry 4," but the compartment will accommodate most types in one arrangement or another.

Fig. 4 is a diagrammatic representation of the connections of the unit, and shows the continuous screening from cell to main amplifier. The cell must be enclosed in a metal case or box, connected to the screening of the lead to the unit. This lead must be short—less than 1 foot if possible—and it ends in a jack-plug, the screening connected to the "sleeve" terminal, while the inner wire (anode lead) goes to the "tip." For linking the unit to the main amplifier, twin screened flex is necessary, and this lead can be reasonably long—several yards, if necessary. "Live" should be connected to the "Grid" pick-up terminal of the set (often marked "G," or "+," or coloured red) while "Neutral" goes to the other. (If no P.U. terminals are provided, it is usually a simple matter to connect the leads to the grid of the detector valve and to the negative end of its bias resistor respectively.

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Dallmeyer f/1.9 2" " ... **£10 10 0**

Wray f/3.5 2" " ... **£4 15 0**

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" " 50mm " New **£5 0 0**

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S.P. Wundertone 50mm. " New **£5 0 0**

Pathe Dallmeyer 25mm " New **£6 0 0**

Pathe Som, 70mm. " New **£4 12 0**

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20mm. Ditmar 8mm Special " New **£6 16 0**

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50mm. 1¾" dia. 1¾" long new lens ... **£2 0 0**

NOTE—We have stocks of Spools, cans, humidors, cine chemicals, title letter sets, projector cases, large stocks of certain lamps (not Pathe) in fact hundreds of items you might need. No lists issued, send S.A.E. for a quotation, state fully when you enquire.

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Lists of 16mm. sound films available, large library to select from, practically all new stock in fine condition. **NEW FEATURES** and **SHORTS** added monthly. Special terms for block bookings. Musicals, Cartoons, Travel, Thrillers, light and heavy Drama. May we offer list of suggested programmes? Write to

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GORDON LOCK, Chantry Lane, Grimsby

CLASSIFIED ADVERTISEMENTS

(*Continued from page 288*)

WANTED

Amateur wants Pathescope S/731 "Vaudeville" also "Cagliostro," "Caligari" and others. Green, 321, Kingsway, Dundee.

Amigo Senior or Billora Tripod. G. J. Hancock, 94, Petty France, S.W.1.

Wanted. Group resistance for Pathescope Lux projector. Collinson, 10, Westerfield Road, Ipswich.

Private buyer will pay £45 cash for Bolex G916. Williams, 6, Ealing Village, W.5. (Perivale 2876)

TRACKING IT DOWN (*continued*)

In super-hets, the top grid cap of the double-diode triode is usually the correct connection, whilst in most mains sets the grid-bias negative is the chassis—but make sure first!) "Earth" should be connected to a good earth, e.g., the third pin of a wall power-plug. In some cases this may not be found essential, but it will ensure freedom from humming or crackling.

HEATHCOTE SOUND-HEAD

WE have recently had the opportunity of examining a sound-head specially designed for the Pathe 200B, and made by Messrs. Heathcote, of Nottingham. The Unit consists of a cast metal frame bearing the necessary rollers, smoothing flywheel, optical system and photo-cell housing. It is attached to the projector (which requires no alteration) by a single bolt, but an extra lug is provided for a second fixing, should this be desired.

The film is fed on to an impedance-roller by jockey-pulleys, passes over a fixed scanning-drum, then round the smoothing-roller, which is flywheel controlled. The film then passes round the lower sprocket wheel of the machine, which draws the film through the Head. The Optical System is of simple and robust construction, and a low-wattage exciter is provided. The Cell-Housing will take any size of cell up to $2\frac{1}{4}''$ x $\frac{3}{8}''$. The finish is of a high order, and the scanning-drum is designed to make only marginal contact with the film. Each unit is adjusted and tested before despatch.

The optical system is evidently computed to give a rather less fine beam than is usual, being in the region of .0015", so that one would expect some falling-off in the high-note response. Also, the head does not allow the normal spacing of $25\frac{1}{2}$ frames between picture and sound to be observed, approximately seven extra frames being required for threading.

The outfit is supplied complete with exciter-lamp and full instructions (but without cell) at 13 guineas, including purchase tax. Supplies are naturally limited, but we understand that delivery can at present be made from stock by the makers, Messrs. Heathcote, 302, Radford Road, Nottingham.

EMERGENCY LAMP FOR THE PATHE VOX

(*Continued from page 273*)

In operation, the bakelite contact cap should be left off to avoid short circuits as little light escapes through the ventilation holes, and if this is done the leads from the inside terminals should be brought through one of these holes and down the centre tube to the lamp holder, in lieu of direct connection inside. This allows the whole unit to be withdrawn through the original lamp hole if sufficient length of flex is allowed.

Finally, the particular class of lamp specified may be in short supply, but as it is a standard type, some should be available, in which case the cost will only be one-sixth of that of the standard replacement. Some consideration in these difficult times.

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ALSO ANY GOOD 'SOUND' PROJECTORS

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Kodascope 8 Mod. 50R	15 gns.
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News Service

R.P.S. KINE GROUP.

AT a meeting of the R.P.S. Kine Group, held at 16, Princes Gate, London, S.W.7, on Friday, June 26th, under the chairmanship of Mr. Arthur Newman, F.R.P.S., Mr. Arthur Cricks, F.R.P.S., gave an interesting talk on "The Instructional Film," illustrated by the projection of four films.

Mr. Cricks said that 18 months before he knew little about Instructional Films, but had been closely connected with the subject since both as student and as teacher. (Mr. Cricks, it should be explained at this point, has been doing considerable work in training army projectionists). He now had considerable appreciation of the film as an instructor, and definite views on the manner and content and the ideal instructional film. He gave very high praise to the Army films produced by and for the Army.

An important point to bear in mind in films of this type was attention to small detail. The film can attend to this better than the most efficient lecturer.

As a teacher of a technical subject he had found it very difficult to get films of a reasonable standard. He had viewed dozens of reels and had found only about four of the type he wanted. He was showing three during the talk. The fourth was an R.A.F. film not permitted for public showing.

Mr. Cricks then showed "How Talkies Talk," "The Microphone" and "Light," making comments on each of these at the conclusion of the reel.

Then he screened a film brought along by Mr. Schofield, Hon. Secretary of the Group. This was a Kodachrome reel entitled "Dance Revivals," made by Mr. Noble, of the Bombay Syndicate, consisting of factual representations in colour of a number of native Indian dances.

An interesting discussion followed.

NICKELODEON.

A CINEMA in which the architect had quite forgotten to include a projection room:

A Heath Robinson method of re-winding by means of a hole in the projection room, leading to a room in the circle below, in which stood a boy who wound the film as it snaked down:

Two designers of cameras who independently arrived at virtually the same design—one largely by theory, the other by practice. . .

These are some of the curious and intriguing items retailed by Mr. Arthur Newman, F.R.P.S., in his fascinating paper "Early Days of Kinematography" read at the July meeting of the R.P.S. Kine Group. Mr. Newman is surely known at least by reputation, to everyone who has to deal with the mechanical side of films. The cinema owes him a debt for the many important inventions he has contributed to it in the past.

In his paper he describes some of his own, notable among them being a projector which would handle any film, whatever the standard of perforation (for in the infancy of cinematography there was no standardisation of perforations) the first film perforating machine to employ a dowel pin for controlling accuracy of pitch and intermittent claw design camera.

Mr. Newman described his talk as merely the index to a large volume of reminiscences, but this was an index of solid substance, studded with names and incidents that have made movie history.

SCHOOL FOR MOVIE MAKERS.

SHORTLY after the outbreak of the War we were interested spectators at a session of the Substandard Cine Section of the Harrow Technical School. An exhibition of its work given to members of the R.P.S. Kine Group in July 1942, provides proof of its continuing vitality.

The Section is under the general control of Mr. Stanley Schofield, F.R.P.S., of Kodak, Ltd., the chief demonstrator being Mr. W. Tigg. Next year

it is proposed to hold two separate classes—one on technique, the other a production unit doing documentary work, titling, etc.

The visitors were shown various units at work, and it was explained that when a film is made as many as 18 to 20 students will work on it. The class is split into various self-contained units, each with its cameraman, director and so on, and work is carried out on the film on successive Saturdays. A Kodak-Special and Paillard-Bolex cameras are used and part of the exhibition consisted of a very comprehensive collection of titling and editing equipment and accessories which are available for use by the students.

Two films were shown, "The Art of the Potter" (dealing with the activities of the pottery class of the School), and an unfinished pictorial survey of all the artistic activities of the art departments.

Some of the shots were of extreme beauty, but one had the feeling that both students and teachers had been pre-occupied with the purely photographic aspect of the subject, and that the pre-photographic stages of script preparation and continuity building were not quite of the same high standard. That, however, is to some extent inevitable in an organisation working as a series of isolated groups, each with slightly varying ideas.

To endeavour to improve the general standard of cinematograph technique in the face of prevalent conditions, and to provide a recognised means of entry into the profession, is a praiseworthy enterprise, and we shall watch its progress with interest.

The Bell & Howell "Utility" Sound-on-Film Projector.

A NUMBER of our readers are possibly familiar with the Bell & Howell "Utility" Filmosound 16mm. Sound-on-Film Projector, but we feel that many others will be interested in this description of the projection apparatus which, we understand, the B. & H. Company will concentrate upon during war time, to the exclusion of other models. Quite a few of these war time models are in use in this country, although new ones are not of course available for public purchase.

The "Utility," which will accommodate 2,000 ft. spools, is all enclosed in a rectangular case which acts as a blimp. The side of the case opens stable-door fashion towards the front in the top half, the lower half hinges outwards and downwards. The feed and take-up arms are attached to the outsides of the case, and the film travels into and out from the internal mechanism through roller-mouthed apertures with funnelled side slots for rapid threading. The basic Bell & Howell mechanism and threading path are adhered to, but one novel note is the removable aperture plate and film skates which can be pulled out as a single unit once the pressure plate is released forwards. Removal and replacement can be effected without touching the film. Bell & Howell Safe-lock spring loaded guards are fitted on the feed and take-up sprockets, and a balanced Oscillatory Stabiliser is employed in conjunction with a fly-wheel controlled sound drum to ensure smooth running of the film past the sound gate. The Oscillatory Stabiliser is a device carrying two jockey rollers upon a common support which is free to move about a centre spindle. The film going to and from the sound drum presses against the top and bottom idlers respectively, and oscillation of the common support about its centre smooths out irregularities of pull imparted to the film.

The take-up end of the mechanism is ingenious. For normal take-up the drive, through a spring driven belt, is taken to a main pulley which, through a tape belt drives the countershaft carrying the squared spool-spindle, with sufficient slippage to accommodate varying loads. A catch is released for rewinding, the countershaft on its pivoted base is lifted upwards about half an inch, and immediately a gear wheel on its reverse end engages with another gear wheel on the main shaft, positively driving the spindle at high speed.

8mm. FILM LIBRARY
Completely reorganised and hundreds of new titles added. Over one thousand films in stock including comedy, drama, interest, educational. Catalogue containing titles and synopsis now ready, Price **9d.** Post 3d.

16mm. SOUND FILM LIBRARY
Illustrated catalogue of feature films now available. Catalogue of musical, interest and comedy films being prepared, in the meantime, we can supply temporary lists of these. Catalogue and lists, etc. Price **1/-**. Further supplements will be forwarded as available. It is impossible to supply an up-to-date catalogue as we are continually adding new films. Particulars of these are forwarded to subscribers. Forthcoming releases include "Streamline Express," "Confidential," "Ladies Crave Excitement," "One Frightened Night," "The Marines are Coming," "In Old Santa Fe," "Crimson Romance," "Young and Beautiful," "Behind Green Lights," "Headline Woman" and many others.

16mm. SILENT FILM LIBRARY
Hundreds of new titles added. Temporary lists sent for **3d.** postage. A catalogue is being prepared and will be available shortly. Price **9d.** post 3d.

9.5mm. SOUND and SILENT LIBRARIES
Every Pathescope 9.5mm. sound and silent film in stock. Send 3d. for terms of hire, etc. Order programmes from your Pathescope Catalogue. We are unable to supply a Pathescope catalogue as it is now out of print, but we are preparing an abbreviated catalogue containing particulars of all titles available. A copy will be forwarded to all those subscribers who sent us 9d. for the Pathescope Catalogue.

FILMS FOR CHRISTMAS. We have started booking for Christmas. If you require films for this period, please book as early as possible. Last year we were completely booked up by December 1st. Films booked for Christmas will be dispatched to reach you *before* December 25th, and are returnable on December 28th. We will commence dispatching films for this period on December 12th to allow for transit delays. Hire charges are as follows :—16mm. Sound **10**/- per reel, 16mm. silent **5**/- per reel, 9.5mm. sound **6**/- per reel, 9.5mm. silent **3**/- per reel, 8mm. Films **3**/- per reel.

IMPORTANT. Please send *all* orders for library films as far in advance of hire date as possible, and state several alternatives to each title. If you hire weekly programmes it is advisable to submit orders covering several weeks, using a separate order form for each programme. (Order forms will be supplied free of charge).

Block bookings can be arranged to cover any period. Choice of films may be left to us—the librarian in charge of your section will see that every programme is different.

Books of vouchers for hire of 16mm. sound films at **£6 6 0** (25), **£12 10 0** (50), **£24 10 0** (100). Books of vouchers for hire of 8mm., 16mm. and 9.5mm. (Silent or Sound) at **£2 10 0** (50), **£5 0 0** (100). The vouchers are undated and valid at any time.

Owing to limited paper supply and constantly changing stock we cannot issue lists as in the past. When enquiring for accessories etc., please state exactly what is required—if purchasing films submit list of titles which interest you.

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3 valve superior amplifiers, suitable talkie conversions, or gramophone/microphone to own silent personal films, incorporating mains transformer for 100w. to 250w. lamp (dispensing with the heating current wasting mains resistances), built-in exciter transformer, etc., bronze ripple finish, in carrying case to hold projector too, as a silent operation "Blimp" 10 in. fine Rola Speaker in second carrying case, with cable to screen, pre-war £20. Projector case soiled, only £12 12 0
9½mm. superlux genuine aluminium reels, ground and polished edges—50 per cent. increase life of personal films, automatic clip fastener, beauty 5 6
1,600ft. reels, strong sides—no sound track wear, non-reflecting £1 1 0
Talkie Projection Stands, large aluminium top, four detaching tube legs, ideal ... £6 6 0
16mm. G.B.-Siemens Talkie Prjtr., large volume, snip £175 0 0
16mm. R.C.A. Talkie Camera, 400ft., electric motor drive, pre-war £395 0 0
Talkie motors, constant speed, silent £9 9 0
9½mm. Panchro Film 30ft. 9/8; 200B, 500w., 750w. lamps.
U.S.A. "Plastic" Projection Screens, world's finest, true to nature, non-directional, automatic case, pre-war, 50 x 40, only ... £7 15 0
16mm. Simplex Camera, 1in. thick only, beauty £15 15 0
9½mm. Todd Stainless Developing Tank £4 17 6
750w., 500w., 400w., 300w., 200w. resistances write
1,500 Devry lamphouse, fit 16mm. permanent installation £35 0 0
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Utility Sound-on-Film Projector (*continued*)

A 750 watt lamp, and a 2" f/1.6 projection lens with Magnilite condenser are fitted as standard.

The projector works at two speeds, 16 and 24 frames per second, operated by a switch immediately in front of the lamphouse of familiar pattern. Separate switches are provided for lamp, projector operation, forward and backward running, and amplifier. There are separate volume controls for the Film track reproducer and the Microphone and Gramophone circuits, and also a remote volume control jack which enables the operator to stand well away from the machine when adjusting general volume. An interesting refinement is the provision of two Tone Control knobs to deal with the Bass and Treble respectively, in each case without interfering with the opposite end of the frequency range.

Framing is of the old pattern, the only point of design which we do not approve, and the tilting mechanism is part of the carrying case, operated by a single knob in front. The machine is floated on a spring compensated base supported within the case. A pilot light is instantly available when required and facilitates lacing of the film and control of the mechanism. The exciter lamp, held in a separate housing at the forward end of the main base casting of the instrument, is easily accessible, and the spare carried in the side door can be placed in position with the minimum of delay. 2 ampere fuses are also provided as spares, and a filled oilcan and cleaning brush are included in the kit.

In setting up, the male end of the speaker cable is plugged into either a single-speaker or a double-speaker receptacle on the projector base. The female end of the cable plugs on to the speaker chassis inside the speaker carrying case. This case accommodates the 2,000 ft. spool for transit. The whole apparatus operates on 115 volts 50 to 60 cycles A.C., but can be operated on higher A.C. voltages through a transformer. A polarity changer or a DC to AC converter are necessary to operate the projector from a D.C. supply.

The amplifier unit is made instantly accessible by undoing four screws and dropping it away from the base of the projector, whether this is in or out of the carrying case. The valve sockets appear rather too close to permit of English valve replacements, but we made no practical test of this point.

The sound quality has that brilliance, "snap" and sparkle which is associated with Bell & Howell sound apparatus, the light output was excellent, and the instrument is a highly efficient and attractive one.

POLYTECHNIC CINE COURSE

The two year course in Cinematography, held in conjunction with the British Kinematograph Society at The Polytechnic, Regent Street, commences the first session in September, and a limited number of applications for enrolment is now invited.

Students, who should have passed the Matriculation or School-leaving Examination in appropriate technical subjects, are given a thorough grounding in every technical aspect of Cinematography. The first year's work covers the basic science subjects of mathematics, electricity, sound and photography. During the second year the specialised application of these subjects is covered. While the course is primarily theoretical, at the end of the first year each student undertakes the production of a 16mm. film, in the photographing and editing of which he gains valuable practical experience.

Your Camera can be Busy Again

(*Continued from page 257*)

in each film, which may be of any length from 100 ft. to 400 ft.

" In order to build up the library as quickly as possible," the prospectus states, " it is hoped to have films made in a number of localities and by a number of agencies. To avoid duplication, films will be made on a co-ordinated plan, and scripts ' censored ' centrally.

" For convenience of definition, each film is considered as consisting of a ' core ' which is the actual lesson to be imparted, and a ' surround ' (the sugar for the pill) of local scenes and other matter of ' interest ' value. Theoretically the ' cores ' might be centrally made, and suitable local ' surrounds ' wedded to them according to requirements. For example, Glasgow might want a film for their permanent use dealing with the significance of traffic lights. A core, in Kodachrome, of the various light phases, and their significance as set out in the Highway Code, could be centrally made.

" Traffic scenes at road junctions with lights could be shot in Glasgow (either monochrome or preferably in colour), and married to the core. A similar procedure would apply to any other area or subject. In the central library the standard copy would be a ' core ' wedded to the ' surround ' most suitable for general display."

The experiment is an interesting one, and if one has doubts that effective co-ordination could be applied, they are largely dispelled by the expectation that, in the final analysis, the individual would have a greater measure of freedom than the regional scheme with its " cores " and " surrounds " would suggest. In short, the best films are likely to be made as complete entities rather than assembled sequences by many hands.

In order to make sure, however, that the individual is competent to carry out the work, one anticipates that he would be expected to provide proof by submitting one or more of his films to the committee. And, of course, his script would need to be approved.

The Society has prepared a synopsis of subjects and suggested treatments and this, and other information, can be obtained from Mr. Wain, c/o R.S.P.A., Terminal House, 52, Grosvenor Gardens, London, S.W.1. Sufficient film stock, with extra for retakes, will be provided for selected scripts ; and titles, if necessary, made by the Society.

Any amateur, whether a member of the Federation or I.A.C. or not, is invited to assist ; but his participation should bring home to him the value of membership of these organisations, particularly at the present time.

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Ideal for the Cine enthusiast of modest means. Extremely simple to erect and is then rigid and taut. Rolls up into a very small space. In popular sizes, Crystal Glass Beaded or Silver. From **17/6.**

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Recently an amateur cinematographer showed me a length of film he had reduced by Farmer's reducer. As he made the film absolutely clear, I asked the reason for it. He replied that he needed the emulsion as he was going to try the Technicolor process.

I take it that he meant he was going to sensitise the film for colour photography. If so, could you tell me the details of the process, with formulae, etc. If I am mistaken as to his meaning, could you give me any ideas as to what he did mean? Also, can you give me any formulae for sensitising ortho. film?—*V.B.*

The Technicolor process is a three-colour process, and special cameras are used which split the light which is received from the subject into three separate bands which are directed to three separate strips of negative material. These bands are each individually filtered to give what is known as "three-colour separation." The result can also be obtained by a "tri-pack" system in which three separate emulsion layers are supported in front of one another, with an appropriate interleaved filtering system, giving three colour separations.

Kodachrome is what is known as an "integral tri-pack" system, in that the three emulsion layers are coated upon a common support.

In the case of Technicolor the three original records are turned into clear gelatine records with selective powers of absorption, in that they will take up amounts of dye in relation to the required densities of the picture. This dye is then off-set on to a clear gelatine film strip which is prepared to receive it, and the three separate records are superimposed upon the same strip of film.

Neither of these processes is a suitable subject for personal experiment, unless the experimenter has a somewhat complete knowledge of the principles of colour photography, and we advise you to read some of the standard text books before venturing further. As a beginning you may be able to find in your public library, or obtain through it on loan, a copy of "Colour Photography in Practice," by Dr. D. A. Spencer.

We do not quite understand the requirement in your second paragraph. Orthochromatic film is so easy to obtain and completely "colour-blind" film so comparatively difficult, that we feel you would be going to unnecessary trouble obtaining the latter in order to attempt to change it into

the former. The principle of sensitising is to add a dye which causes the film to absorb light of a colour to which it is normally not sensitive. The dyes used for orthochromatic sensitisation are eosin and erythrosin, but they are not easy of access in these difficult times.

STEREOPHOTOGRAPHY WITH A SINGLE LENS

Will you please tell me whether the following idea would work? A small box or hood placed in front of the cine camera lens. By means of angle mirrors, half of the picture is taken from a point to the left, and half is taken from a point to the right. The film is processed in the usual way and projected with the same box or hood placed in front of the projector lens but with a red glass over the left mirror and a blue-green over the right. The audience views the screen through spectacles of red and blue-green, and the illusion of depth is obtained.

The idea of stereoscophy by means of complementary colours is old, of course, but I have never seen any apparatus that seems so simple as this. Therefore, are there any snags which I have overlooked?—*S.H.*

The mirror stereoscopic system suggested by you is quite practical in theory, and a device designed on an almost identical principle, known as the "Sterecap" has already been developed by Mr. A. W. Judge in the making of "still "stereo pictures. Mr. Judge's device has the added advantage of rotating outer mirrors which effects a change in the separation of the images. You will appreciate, however, that surface-silvered mirrors will be necessary in such a system, to avoid multiple image reflection and undue loss of light due to reflection.

The question is dealt with most exhaustively by Mr. H. A. Robinson, B.Eng., M.R.S.T., in two articles which appeared on pages 444, 445, 446, 455 and 456 of the British Journal of Photography, issues for September 13th and 20th, 1940. Copies can no doubt be borrowed through your local public library, which should be in touch with the National Library.

In the second of his articles Mr. Robinson deals with the "Stereoly" Leica attachment and the "Stereoly-Polaroid Projection System," in which Polaroid filters are used on the projection lenses in conjunction with matched Polaroid spectacles on the eyes of the viewer. Much valuable information for your purpose can be obtained from these articles.

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(*Continued on page 280*)

Published by Link House Publications, Ltd., 324, Gray's Inn Road, London, W.C.1. Tel.: Terminus 2451. Printed by Arthurs Press Ltd., Woodchester, Stroud, Glos. Agents for Australia and New Zealand Gordon & Gotch, Ltd. Agents for South Africa: Central News Agency, Ltd. (London Agents: Gordon & Gotch, Ltd.) Printed in England

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Thank you to Dino Everett for his support in sharing this magazine online.

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